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(57) Abstract :
 Registration is the major issue in the case of multilayer printing of functional circuits and devices. To overcome the registration issue, the alignment of successive masks in printing should be so perfect that upon printing both layers overlap, perfectly. In the case of an automatic roll-to-roll printing system, highly sophisticated mask alignment techniques such as image processing are being used to achieve layers™ registration. While in the case of a sheet to sheet printing it is impossible to achieve good registration which limits the fabrication of multilayer device prototype with precise geometry at laboratory scale. Here, we propose a screen printing system to achieve a high level of registration for multilayer pattern printing on transparent as well as opaque substrates. It consists of an optical light-assisted screen printing bed along with a micro-scale gridline for the perfect alignment of mask and successive printed line. The system can be utilized to print both graphics and electronic devices with very high registration. The range of registration can be a few microns depending upon the gridline resolution.

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